What is claimed is:

1. A reduced size TM cylindrical shaped microstrip antenna array comprising:

(a) a first dielectric layer

(b) a plurality of rectangular shaped antenna elements mounted on an upper surface of said first dielectric layer, said antenna elements being aligned with one another and fabricated from copper, said antenna elements being adapted to transmit RF carrier signals containing telmetry data;

(c) a copper cross hatch pattern mounted on the upper surface of said first dielectric layer around a periphery for each of said antenna elements wherein a gap forms between first, second and third edges of the periphery of each of said antenna elements and said copper cross hatch pattern;

(d) an antenna feed network mounted on a bottom surface of said first dielectric layer for connecting each of said antenna elements to an antenna feed network input terminal, said antenna feed network including a plurality of transmission lines configured to provide for an equal transmission line length from said antenna feed network input terminal to each of said antenna elements such that the RF carrier signals transmitted by each of said antenna

elements are in phase and have equal amplitudes;

(e) a band stop filter integrally formed with said antenna feed network on the bottom surface of said first dielectric layer, said band stop filter providing for a minimum band-stop rejection of 60 decibels to isolate said RF carrier signals containing telmetry data from L-Band Radio Frequency signals containing GPS data.

(f) a second dielectric layer positioned below said first dielectric layer in alignment with said first dielectric layer; and

(g) a solid copper ground plane affixed to a bottom surface of said first dielectric layer.

2. The TM cylindrical shaped microstrip antenna of claim 1 wherein said plurality of transmission lines for said antenna feed network includes a main transmission line connected to said antenna feed network input terminal and a plurality of branch transmission lines, each of said branch transmission lines having one end thereof connected to one of said antenna elements and an opposite end thereof connected to said main transmission line.

3. The TM cylindrical shaped microstrip antenna of claim 2 wherein said band-stop filter includes six etched copper open

circuit stubs connected to said main transmission line, three of said six etched copper open circuit stubs being positioned on one side of said main transmission line in proximity to said antenna feed network input terminal and a remaining three of said six etched copper open circuit stubs being positioned on an opposite side said main transmission line in proximity to said antenna feed network input terminal.

4. The TM cylindrical shaped microstrip antenna of claim 3 wherein each of said six etched copper open circuit stubs has an L shape, each of said six etched copper open circuit stubs operating as a short circuit within a bandwidth for said band-stop filter.

5. The TM cylindrical shaped microstrip antenna of claim 1 wherein said TM cylindrical shaped microstrip antenna operates at a TM frequency band of 2200-2300 MHz, resulting in a band width for said TM cylindrical shaped microstrip antenna of 100 MHz.

6. The TM cylindrical shaped microstrip antenna of claim 1 wherein said plurality of rectangular shaped antenna elements comprises eight rectangular shape microstrip antenna elements.

7. The TM cylindrical shaped microstrip antenna of claim 1 wherein said band-stop filter provides said minimum band-stop rejection of 60 decibels at frequencies approximating 1575 MHz.

8. The TM cylindrical shaped microstrip antenna of claim 1 further comprising a plurality of copper plated through holes positioned within said first dielectric layer and a plurality of plated through holes positioned within said second dielectric layer, the copper plated through holes of said first dielectric layer aligning with the copper plated through holes of said second dielectric layer, the copper plated through holes of said first dielectric layer being EM coupled to the copper plated through holes of said second dielectric layer, wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer prevent said antenna feed network from becoming coupled to said antenna elements.

9. The TM cylindrical shaped microstrip antenna array of claim 1 wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer each comprise approximately 270 copper plated through holes.

10. A reduced size TM cylindrical shaped microstrip antenna array comprising:

(a) a first dielectric layer

(b) a plurality of rectangular shaped antenna elements mounted on an upper surface of said first dielectric layer, said antenna elements being aligned with one another and fabricated from copper, said antenna elements being adapted to transmit RF carrier signals containing telmetry data, said antenna elements operating at a TM frequency band of 2200-2300 MHz, resulting in a band width for said TM cylindrical shaped microstrip antenna of 100 MHz;

(c) a copper cross hatch pattern mounted on the upper surface of said first dielectric layer around a periphery for each of said antenna elements wherein a gap forms between first, second and third edges of the periphery of each of said antenna elements and said copper cross hatch pattern;

(d) an antenna feed network mounted on a bottom surface of said first dielectric layer for connecting each of said antenna elements to an antenna feed network input terminal, said antenna feed network including a plurality of transmission lines configured to provide for an equal transmission line length from said antenna feed network

input terminal to each of said antenna elements such that the RF carrier signals transmitted by each of said antenna elements are in phase and have equal amplitudes, wherein said plurality of transmission lines for said antenna feed network includes a main transmission line connected to said antenna feed network input terminal and a plurality of branch transmission lines, each of said branch transmission lines having one end thereof connected to one of said antenna elements and an opposite end thereof connected to said main transmission line;

(e) a band stop filter integrally formed with said antenna feed network on the bottom surface of said first dielectric layer, said band-stop filter including a plurality of etched copper open circuit stubs connected to said main transmission line, said band stop filter providing for a minimum band-stop rejection of 60 decibels to isolate said RF carrier signals containing telmetry data from L-Band Radio Frequency signals containing GPS data;

(f) a second dielectric layer positioned below said first dielectric layer in alignment with said first dielectric layer; and

(g) a solid copper ground plane affixed to a bottom surface of said first dielectric layer.

11. The TM cylindrical shaped microstrip antenna of claim 10 wherein said plurality of etched copper open circuit stubs comprises six etched copper open circuit stubs connected to said main transmission line, three of said six etched copper open circuit stubs being positioned on one side of said main transmission line in proximity to said antenna feed network input terminal and a remaining three of said six etched copper open circuit stubs being positioned on an opposite side said main transmission line in proximity to said antenna feed network input terminal.

12. The TM cylindrical shaped microstrip antenna of claim 10 wherein each of said plurality of etched copper open circuit stubs has an L shape, each of said plurality of etched copper open circuit stubs operating as a short circuit within a bandwidth for said band-stop filter.

13. The TM cylindrical shaped microstrip antenna of claim 10 wherein said plurality of rectangular shaped antenna elements comprises eight rectangular shape microstrip antenna elements.

14. The TM cylindrical shaped microstrip antenna of claim 10 wherein said band-stop filter provides said minimum band-stop rejection of 60 decibels at frequencies approximating 1575 MHz.

15. The TM cylindrical shaped microstrip antenna of claim 10 further comprising a plurality of copper plated through holes positioned within said first dielectric layer and a plurality of plated through holes positioned within said second dielectric layer, the copper plated through holes of said first dielectric layer aligning with the copper plated through holes of said second dielectric layer, the copper plated through holes of said first dielectric layer being EM coupled to the copper plated through holes of said second dielectric layer, wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer prevent said antenna feed network from becoming coupled to said antenna elements.

16. The TM cylindrical shaped microstrip antenna array of claim 10 wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer each comprise approximately 270 copper plated through holes.

17. A reduced size TM cylindrical shaped microstrip antenna array comprising:

(a) a first dielectric layer

(b) eight rectangular shaped antenna elements mounted on an upper surface of said first dielectric layer, said eight antenna elements being aligned with one another and fabricated from copper, said eight antenna elements being adapted to transmit RF carrier signals containing telmetry data, said eight antenna elements operating at a TM frequency band of 2200-2300 MHz, resulting in a band width for said TM cylindrical shaped microstrip antenna of 100 MHz;

(c) a copper cross hatch pattern mounted on the upper surface of said first dielectric layer around a periphery for each of said eight antenna elements wherein a gap forms between first, second and third edges of the periphery of each of said eight antenna elements and said copper cross hatch pattern;

(d) an antenna feed network mounted on a bottom surface of said first dielectric layer for connecting each of said eight antenna elements to an antenna feed network input terminal, said antenna feed network including a plurality of transmission lines configured to provide for an equal

transmission line length from said antenna feed network input terminal to each of said eight antenna elements such that the RF carrier signals transmitted by each of said eight antenna elements are in phase and have equal amplitudes, wherein said plurality of transmission lines for said antenna feed network includes a main transmission line connected to said antenna feed network input terminal and a plurality of branch transmission lines, each of said plurality of branch transmission lines having one end thereof connected to one of said eight antenna elements and an opposite end thereof connected to said main transmission line;

(e) a band stop filter integrally formed with said antenna feed network on the bottom surface of said first dielectric layer, said band-stop filter including six L-shaped etched copper open circuit stubs connected to said main transmission line, said band stop filter providing for a minimum band-stop rejection of 60 decibels to isolate said RF carrier signals containing telmetry data from L-Band Radio Frequency signals containing GPS data;

(f) a second dielectric layer positioned below said first dielectric layer in alignment with said first dielectric layer;

(g) a third dielectric layer positioned above said first

dielectric layer in alignment with said first dielectric layer, said third dielectric layer functioning as a cover for said TM cylindrical shaped microstrip antenna array; and

(h) a solid copper ground plane affixed to a bottom surface of said second dielectric layer.

18. The TM cylindrical shaped microstrip antenna of claim 17 wherein each of said six etched copper open circuit stubs operating as a short circuit within a bandwidth for said band-stop filter.

19. The TM cylindrical shaped microstrip antenna of claim 17 further comprising a plurality of copper plated through holes positioned within said first dielectric layer and a plurality of plated through holes positioned within said second dielectric layer, the copper plated through holes of said first dielectric layer aligning with the copper plated through holes of said second dielectric layer, the copper plated through holes of said first dielectric layer being EM coupled to the copper plated through holes of said second dielectric layer, wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer prevent said antenna feed network from

becoming coupled to said antenna elements.

20. The TM cylindrical shaped microstrip antenna array of claim 17 wherein the copper plated through holes of said first dielectric layer and the copper plated through holes of said second dielectric layer each comprise approximately 270 copper plated through holes.